

at least one receiver for receiving the electromagnetic wave, the measuring distance influencing a wave propagation between the at least one transmitter and the at least one receiver such that when a coating forms on the windshield, an output signal sensed by the at least one receiver is changed.

24. (Amended) The rain sensor according to claim 23, further comprising:

a common printed circuit board on which is mounted the plurality of optical and electronic components in accordance with SMD technology.

26. (Amended) The rain sensor according to claim 25, further comprising:

contact pins through which the common printed circuit board is connected to the integrated connector.

33. (Amended) The rain sensor according to claim 20, wherein:

the plurality of optical and electronic components includes at least one ambient light sensor.

37. (Amended) The rain sensor according to claim 20, wherein:

the first region includes a black plastic.

38. (Amended) The rain sensor according to claim 20, wherein:

the second region includes a transparent plastic.

39. (Amended) The rain sensor according to claim 20, wherein:

the first region and the second region are formed according to a two-color injection molding process.

40. (Amended) The rain sensor according claim 20, wherein:

the first region and the second region correspond to two single-color plastics, and

the light conducting element is formed by combining the two single-

color plastics.

Please add the following new claims:

42. (New) The rain sensor according to claim 33, wherein:
the at least one ambient light sensor is sensitive to visible light.
43. (New) The rain sensor according to claim 20, wherein:
the light conducting element forms a cover of the housing.
44. (New) A rain sensor arranged with respect to a measuring distance in which is arranged a windshield, comprising:
a housing;
a light conducting element adapted to be joined to the housing; and
a plurality of optical and electronic components mounted in the housing
and including:
at least one transmitter for transmitting an electromagnetic wave,
at least one ambient light sensor that is sensitive to visible light,
and
at least one receiver for receiving the electromagnetic wave, the
measuring distance influencing a wave propagation between the at least one transmitter
and the at least one receiver such that when a coating forms on the windshield, an
output signal sensed by the at least one receiver is changed.
45. (New) The rain sensor according to claim 44, wherein:
the rain sensor is used in a motor vehicle.
46. (New) The rain sensor according to claim 44, wherein:
the coating is a result of wetting by precipitation.
47. (New) The rain sensor according to claim 44, wherein:
the light conducting element forms a base plate of the housing and
includes a broad area of connection with the windshield.

48. (New) The rain sensor according to claim 47, further comprising:
a common printed circuit board on which is mounted the plurality of optical and electronic components in accordance with SMD technology.
49. (New) The rain sensor according to claim 48, further comprising:
an integrated connector for an electrical connection to a downstream analysis unit, wherein:
the housing corresponds to a rectangular-shaped sensor housing.
50. (New) The rain sensor according to claim 49, further comprising:
contact pins through which the common printed circuit board is connected to the integrated connector.
51. (New) The rain sensor according to claim 44, wherein:
the rain sensor is cemented to an inside of the windshield.
52. (New) The rain sensor according to claim 51, further comprising:
a transparent film that is self-adhesive on each side thereof and corresponds to a connection between the windshield and the light conducting element.
53. (New) The rain sensor according to claim 44, wherein:
the output signal is provided to a downstream analysis circuit and includes information with respect to an instantaneous degree of wetting of the windshield.
54. (New) The rain sensor according to claim 53, wherein:
at least one of a windshield wiper mechanism and a vehicle lighting system is activated as a function of the output signal.
55. (New) The rain sensor according to claim 44, wherein:
the at least one transmitter includes at least one LED.

56. (New) The rain sensor according to claim 55, wherein:
a first one of the at least one receiver that detects an optical signal emitted by the at least one LED includes a photodiode.
57. (New) The rain sensor according to claim 44, wherein:
the at least one ambient light sensor includes an aperture angle of approximately 40° inclined upward with an aperture direction in a direction of travel.
58. (New) The rain sensor according to claim 44, wherein:
the at least one ambient light sensor is sensitive to an ultraviolet light.
59. (New) The rain sensor according to claim 58, wherein:
the ultraviolet light corresponds to sunlight.
60. (New) The rain sensor according to claim 44, wherein:
where an infrared light is used, the light conducting element is formed of a black plastic.
61. (New) The rain sensor according to claim 44, wherein:
the light conducting element includes optical areas formed from transparent plastic for the at least one receiver.
62. (New) The rain sensor according to claim 44, wherein:
the light conducting element includes a plastic part formed according to a two-color injection molding process.
63. (New) The rain sensor according claim 44, wherein:
the light conducting element is formed by combining two single-color plastics.
64. The rain sensor according to claim 44, wherein:
the light conducting element includes integrated lens structures for light bundling.